

Ultrasonic Inspection/Acoustic Microscopy

Uses acoustic energy to probe materials and structures

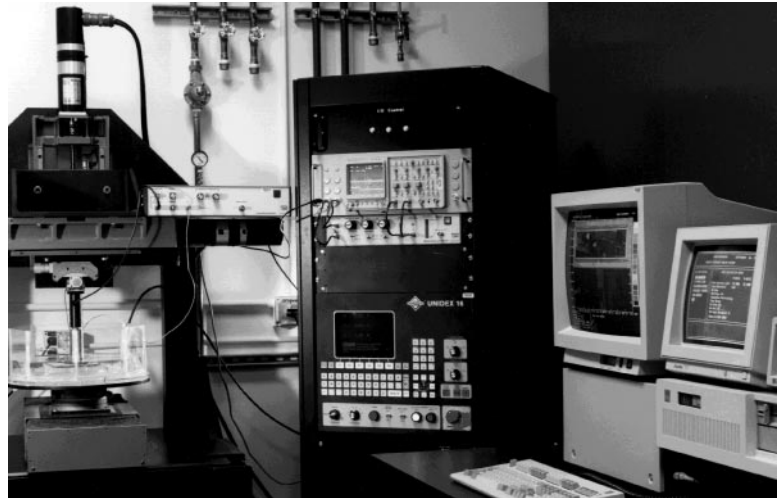
Ultrasonic NDE is concerned with the evaluation of material properties and conditions by probing the material with high-frequency sound waves. Pulses of ultrasonic waves are radiated into the material and subsequently detected using specially designed transducers. The sound

APPLICATIONS

- On-line manufacturing inspection
- Determining material properties
- Detection of delaminations and disbonds
- Assessment of bond quality
- Composite materials

pulses are altered as they travel into and through the material due to attenuation, reflection, and scattering. The output pulse—the detected signal—is displayed, processed, and interpreted in terms of the internal struc-

ture of the object under investigation, based on its relation to the input pulse. Most often, ultrasonics is applied to detect thickness and search for flaws in metals, for example: cracks, voids, porosity and delaminations. However, ultrasonics also can be used to ascertain grain size, measure residual stress and elastic moduli, evaluate bond quality (e.g., solid-state, adhesive, etc.), and analyze surface characteristics. Whenever the configuration of the object under test permits, a two- or



LLNL's state-of-the-art equipment for ultrasonic inspection.

three-dimensional image of the interior of the object can be made showing reflections of the sound.

Availability: Our ultrasonic technology is available now. We are seeking industrial partners with whom we can collaborate on materials and structural concerns that can be resolved with ultrasonic NDE.

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